

IN THE SPECIFICATION:

Please amend paragraph [0002], as follows:

In the manufacture of a semiconductor element or the like, an exposing apparatus is used. As semiconductor elements have been rendered microscopic and highly integrated, X-ray has come to attract attention as one of the most promising choices of exposing light. The rate of the X-ray attenuation caused by the presence of the atmospheric air is extremely high. Therefore, when an X-ray is used as the exposure beam for a semiconductor exposing apparatus, the X-ray is guided into an exposure chamber through a beam duct which has been evacuated to an extremely high degree. In an exposure chamber, a substrate positioning stage and a mask holding apparatus are placed. A substrate positioning stage accurately positions a piece of substrate wafer or the like with the use of a chuck activated by suction. A mask holding apparatus holds a mask. In order to accurately expose the predetermined area of a piece of substrate by an exposure beam, the substrate piece must be very accurately positioned. Therefore, a laser interferometry based measuring device, or the like, is placed in an exposure chamber to measure the position of the substrate positioning stage in the chamber. In order to prevent X-ray attenuation, the atmospheric air in an exposure chamber is evacuated, creating a virtual vacuum chamber, while filling the evacuated exposure chamber with a small amount amount of helium gas or the like to enhance the heat dissipation from the substrate in the wafer form, or a mask. Further, an exposure chamber is structured so that the pattern of the mask held by a mask holding apparatus is transferred onto the substrate by the X-ray as exposure light.

Please amend paragraph [0003], as follows:

The internal pressure of an exposure chamber, or a vacuum chamber, affects the amount of X-ray transmission through the chamber. In other words, the change in the internal pressure of the vacuum chamber causes nonuniform exposure. The vacuum level falls as the atmospheric air, the gases from the bearings or the like, of the aforementioned positioning stage or the like, leak into the vacuum chamber, which in turn reduces the amount of the X-ray transmission through the internal space of the vacuum chamber. In other words, this kind of vacuum loss in an exposure chamber, or a vacuum chamber, is one of the main reasons why the performance of an exposing apparatus deteriorates in accuracy, and also why the throughput of an exposure apparatus reduces. Further, the internal temperature of a vacuum chamber locally increases due to the heat sources contained in the vacuum chamber, for example, the actuator or electrical wiring of the substrate positioning stage, the laser, or the like. Also, the internal temperature of the vacuum chamber is locally increased by the heat from the exposure light projected onto the substrate wafer and the mask. This kind of local temperature increase deforms the mask and the substrate, making it impossible to desirably transfer the mask pattern. In addition, the local temperature fluctuation creates a turbulence in the ambience gas in the measurement path of the laser beam projected by the laser interferometry based measuring device in the vacuum chamber, which results in fluctuation in the refractive index of this portion of the ambience ambient gas. The fluctuation of the refractive index makes it impossible to accurately measure the position of the substrate positioning device with the use of a laser interferometry based measuring device. Thus, the pressure, temperature, and degree of purity of the gas in an exposure chamber, or a vacuum chamber, must be very precisely controlled as is evident from the above explanation.

Please amend paragraph [0005], as follows:

Further, the following technology is disclosed in Japanese Laid-Open Patent Application No. 156625/1990. Thus, according to this patent, a sealed chamber is employed as an exposure chamber in which X-ray is used as exposure light. In operation, the atmospheric air in the sealed chamber is evacuated, and is replaced with a small amount of gas, for example, helium gas. As for the operational fluid for the static pressure bearings for the positioning stage in the evacuated sealed chamber (hereinafter, "vacuum chamber"), the ambient gas, that is, helium gas, in the vacuum chamber is used; the ambient gas is fed to the static pressure bearing after its pressure is increased with the ~~use~~ use of a compressor. The internal pressure of the vacuum chamber is controlled by adjusting the flow rate at which the helium gas, or the ambient gas, in the vacuum chamber is exhausted. More specifically, the internal pressure of the vacuum chamber is detected, and the flow rate at which the ambient gas in the vacuum chamber is exhausted by a vacuum pump is adjusted in response to the detected internal pressure of the vacuum chamber, so that the internal pressure of the vacuum chamber remains virtually constant. The helium gas suctioned out of the vacuum chamber by the vacuum pump is recirculated into the vacuum chamber to reduce helium gas consumption, while keeping constant the purity of the helium gas in the vacuum chamber so that exposure does not become uneven.

Please amend paragraph [0007], as follows:

There is a technology for controlling the internal environment of a semiconductor exposing apparatus, the ambient gas of which is the atmospheric air. According to this technology, the chamber in which an exposing apparatus is placed is connected to an air conditioning apparatus, which prevents the internal temperature of the chamber from being

increased by the heat sources, for example, a mechanical power source such as a motor, electrical wiring, a laser, and the like, in the chamber, so that the internal temperature of the chamber remains constant at a predetermined level. This type of air conditioning apparatus is constituted of a fan, and a heat exchanger such as a heater or a cooler. It takes in the air from within a chamber or the atmospheric air, adjusts the temperature of the air by the heat exchanger, and sends the air into the chamber by the fan through the intake opening of the chamber. In other words, it controls the temperature of the ambient air in the chamber by circulating the air through a predetermined path, so that the temperature of the ambient air in the chamber does not fluctuate, and does not ~~becomes~~ become uneven. Further, the dust in the air is removed by a filter disposed in the air circulation path so that the cleanliness of the chamber is controlled.